

WISCONSIN GUIDE

TRANSPORTATION RESEARCH BOARD

83rd Annual Meeting

JANUARY 11-15, 2004
WASHINGTON, D.C.

- WisDOT and University of Wisconsin presentations and descriptions – by day, session, time and meeting room
- Online links to TRB Annual Meeting information for state DOT practitioners



WELCOME TO THE TRB ANNUAL MEETING

We are pleased to provide this *Wisconsin Guide* for the TRB 83rd Annual Meeting to highlight the contributions of WisDOT practitioners and University of Wisconsin investigators who will be among this year's presenters and session leaders.

The TRB Annual Meeting provides an opportunity for nearly 9,000 transportation professionals from around the world to exchange information, knowledge and insights on research that can be put to work for a better transportation system.

More than 2,200 presentations of new ideas will be given at 500 sessions covering multimodal planning, design, construction, operations and safety. WisDOT has a vital interest in all of these, because our vision is "Dedicated people creating transportation solutions through *innovation* and exceptional service."

We hope this guide will facilitate exchange among Wisconsin participants in the TRB Annual Meeting and among all Wisconsin transportation professionals in industry, academia or public sector agencies. We all rely on research to solve problems, generate new technology, improve quality, and save time and money.

WisDOT is pleased to provide direct support for many of the papers that will be presented at TRB this year. Through FHWA State Planning and Research funds, the WisDOT RD&T Program makes awards for applied research projects to meet department challenges. We note these papers in the guide and also provide links to WisDOT's Research & Library pages where the current status or final report of the project can be found.

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INTERNET LINKS TO THE TRB ANNUAL MEETING

INTERACTIVE ANNUAL MEETING PROGRAM

<http://www.trb.org/am/ip/>

Search TRB sessions for subjects, organizations or presenters of interest to you.

2004 CATALOG OF PRACTICAL PAPERS

http://www.trb.org/am/ip/Practical_Papers.asp

These 127 papers were identified by TRB committees as having potential for immediate application by state DOTs and their partners in industry and local and regional government agencies. An abstract and author contact information accompany each paper's listing. The complete text of these and all other papers presented will be on the Annual Meeting CD-ROM, which will be available from

WisDOT's RD&T Program immediately after the Annual Meeting.

The following subject areas are covered in the Catalog of Practical Papers:

- Bituminous materials
- Concrete materials
- Construction
- Data and information systems
- Design
- Geology and earth materials
- Pavement management
- Renewing the transportation infrastructure
- Soil mechanics
- Structures

WISDOT AND UW PRESENTERS

TRB Sessions January 11 through January 15

The presentations of WisDOT staff and UW researchers are listed here by day with times, hotel and room locations, and brief summaries. Be sure to check the TRB Final Program for possible room changes. Practical papers (research identified as being of immediate practical interest to state transportation professionals) are identified with a double asterisk (**). Full abstracts of many of the practical papers can be found on the TRB Web site at http://www.trb.org/am/ip/Practical_Papers.asp.

SUNDAY, JANUARY 11

8:30 a.m. – 12 p.m., Hilton (Chevy Chase)

COMMITTEE MEETING: CONFERENCE PLANNING MEETING ON CENSUS DATA FOR TRANSPORTATION

Kenneth J. Leonard

Wisconsin Department of Transportation, presiding

The conference being planned by this committee will bring together professionals who use census data for transportation planning. Key objectives are to review journey-to-work products, share analytical and technical practices during a time of change for census methodology and products, and assess ongoing American Community Survey research.

2 p.m. – 5:30 p.m., Hilton (Cabinet)

WORKSHOP 156: USING GPS FOR GIS DATA COLLECTION

Integrating GPS/GIS for Winter Operations Decision Making Using Intelligent Maintenance Vehicle Data and Accurate Roadway Centerlines (P04-1147)

Alan P. Vonderohe

University of Wisconsin, Madison

8 a.m. – 9:45 a.m., Marriott (Salon 2)

SESSION 201: EVALUATION OF RUMBLE STRIPS

** Safety Evaluation of Centerline Rumble Strips: Crash and Driver Behavior Analysis (04-3932)

David A. Noyce

University of Wisconsin, Madison

Researchers evaluated the effectiveness of centerline rumble strips in reducing cross-over-the-centerline crashes and improving the safety of undivided roadways. They looked at before and after crash data on several highways and used a driving simulator to evaluate driver behavior.

8 a.m. – 9:45 a.m., Marriott (Salon 3)

SESSION 202: IMPACT OF WEATHER CONDITIONS ON FREEWAY OPERATIONS

Wisconsin's Road Weather Safety Action Plan (P04-0137)

John M. Corbin

Wisconsin Department of Transportation

8 a.m. – 9:45 a.m., Marriott (Maryland B)

SESSION 208: MAINTENANCE CONTRACTING

** Highway Preventive Maintenance Implementation: Comparing Challenges, Processes, and Solutions in Three States (04-5179)

Justin James Marlowe

University of Wisconsin, Milwaukee

Robert J. Eger III

University of Wisconsin, Milwaukee

Hani H. Titi

University of Wisconsin, Milwaukee

State transportation policymakers are challenged with incorporating preventive maintenance strategies into existing asset management systems. Researchers compared three state DOTs' approaches to preventive maintenance, including such issues as integration into planning and budgeting processes and technical needs assessment for state highways.

8 a.m. – 9:45 a.m., Marriott (Cotillion North)

SESSION 203: PERFORMANCE MEASURES IN WINTER MAINTENANCE

** Pilot Study to Measure Potential of Using Speed Recovery Duration as Winter Maintenance Performance Measure (04-4348)

Chanyoung Lee

University of Wisconsin, Madison

Bin Ran

University of Wisconsin, Madison

To improve effectiveness and efficiency, researchers sought to develop performance measures for winter highway maintenance. They evaluated "speed recovery duration" as a possible performance measure, combining speed data from automatic traffic recorders and winter storm report data to determine the amount of time needed for vehicles to recover to normal speeds after a snow event.

8 a.m. – 9:45 a.m., Marriott (Cotillion South)

SESSION 204: PERMEABILITY TESTING ADVANCES IN HOT-MIX ASPHALT

** Comparison of Field and Laboratory Permeability of Hot-Mix Asphalt Mixtures (04-4490)

Kunnawee Kanitpong

University of Wisconsin, Madison

Robert P. Schmitt

University of Wisconsin, Platteville

Hussain U. Bahia

University of Wisconsin, Madison

Jeffrey S. Russell

University of Wisconsin, Madison

Laboratory permeability testing of asphalt mixtures helps estimate permeability before construction, during the mixture design process. This research compared the results of laboratory and field tests of both field cores and laboratory-compacted specimens, and also evaluated the effect of density and thickness on permeability.

9:30 a.m. – 12 p.m., Marriott (Exhibit Hall A)

**POSTER SESSION 234: PAVEMENT
EVALUATION, TESTING, MONITORING,
AND PERFORMANCE**

**** Strategy for Modeling Pavement Performance Analysis
System at Wisconsin Department of Transportation
(04-4104)**

Teresa M. Adams

University of Wisconsin, Madison

This study's objective was to design a scientific Pavement Performance Analysis System for WisDOT that integrates variables such as design, construction and traffic loading effects to predict pavement performance. Researchers designed and compared database models to create a comprehensive system that incorporates data acquisition, modeling and analysis.

10:15 a.m. – 12 p.m., Hilton (Thoroughbred)

**SESSION 267: ACCESS, EQUITY, AND
TRANSIT DEMAND ISSUES**

Edward A. Beimborn

University of Wisconsin, Milwaukee, presiding

This session includes presentations on measuring change in small-scale transit accessibility with GIS, Chicago's regional transit program for Welfare to Work, evaluating equity for transit, and analyzing determinants of transit ridership.

10:15 a.m. – 12 p.m., Marriott (Maryland A)

**SESSION 247: LEGAL AND ENGINEERING
ISSUES FOR LEVERAGING TECHNOLOGY
RESOURCES: CREATING EFFICIENCIES IN
TRANSPORTATION SYSTEMS WITH LIMITED
BUDGETS**

Sharing the Light: Wisconsin Department of Transportation Program to Develop, Fund, and Implement Fiber-Optic Highway by Contracting with Other Public Agencies (P04-0607)

James S. Thiel

Wisconsin Department of Transportation

10:15 a.m. – 12 p.m., Hilton (Military)

**SESSION 269: STATEWIDE TRAVEL
DEMAND MODELING**

Brief Synthesis of State of the Practice in Statewide Travel Forecasting (P04-0055)

Alan J. Horowitz

University of Wisconsin, Milwaukee

10:15 a.m. – 12 p.m., Hilton (Georgetown East)

**SESSION 272: SYSTEMATIC EVALUATION OF
CUSTOMER NEEDS AND DATA PROGRAMS**

State Management Perspectives on Uses and Importance of Data (P04-0066)

Kenneth J. Leonard

Wisconsin Department of Transportation

1:30 p.m. – 3:15 p.m., Hilton (Lincoln West)

**SESSION 300: DATA NEEDS, GAPS, AND
FUSION OF TRANSPORTATION SECURITY,
PART I**

State Perspectives (P04-0691)

Jeffrey L. Western

Wisconsin Department of Transportation

1:30 p.m. – 3:15 p.m., Marriott (Coolidge)

SESSION 286: ISSUES AFFECTING DBES' ABILITY TO COMPETE

Panel Discussion (P04-0249)

Eugene S. Johnson

Wisconsin Department of Transportation

Topics include current practices in state Disadvantaged Business Enterprise programs, the impact of the prompt payment/return of retainage requirement on prime contractors and subcontractors, restructuring DBE supportive services, and capacity and capability of small businesses to be competitive for 21st-century mega projects (contract bundling and design-build).

1:30 p.m. – 3:15 p.m., Marriott (Salon 3)

SESSION 275: RECENT ACTIVITIES IN INTERSECTION SAFETY

Keith K. Knapp

University of Wisconsin, Madison, presiding

This session includes presentations on FHWA intersection safety activities, implementation of the National Agenda for Intersection Safety, predicting and improving safety at intersections, and signalized intersection safety international scan tour implementation activities.

3:45 p.m. – 5:30 p.m., Marriott (Salon 1)

SESSION 315: ASPHALT BINDERS: HIGH-TEMPERATURE PERFORMANCE AND SPECIFICATIONS

**** Why Do We Need to Change G*/sin d and How?**
(04-3494)

Rodrigo Andres Delgadillo

University of Wisconsin, Madison

Kitae Nam

University of Wisconsin, Madison

Hussain U. Bahia

University of Wisconsin, Madison

In 2001, AASHTO sponsored project NCHRP 9-10, which provided a revised system for testing and evaluating asphalt binders based on damage behavior, as a supplement to Superpave specifications. The new system was conceptual in nature, and this research proposes tentative specification limits that represent a step toward more reliable binder rutting characterization. To develop the proposed limits, 19 asphalts of several grades currently used or marketed in Wisconsin were tested.

7:30 p.m. – 9:30 p.m., Hilton
(International East)

SESSION 369: ASSET MANAGEMENT: MOVING FROM THEORY TO PRACTICE—LESSONS FROM FIFTH NATIONAL ASSET MANAGEMENT CONFERENCE

Ernie Wittwer

Wisconsin Transportation Center, presiding

This session includes presentations on state DOT experiences, local government experiences, tools and data integration issues, and asset management as communication.

7:30 p.m. – 9:30 p.m., Marriott (Cotillion South)

SESSION 353: GREATEST HITS FROM SECOND URBAN STREET SYMPOSIUM

Urban Minor Arterial Conversion from Four-Lane Undivided to Three Lanes (P04-0973)

Keith K. Knapp

University of Wisconsin, Madison

MONDAY, JANUARY 12 *continued*

7:30 p.m. – 9:30 p.m., Shoreham (Ambassador)

SESSION 362: NONDESTRUCTIVE TEST METHODS FOR LONG-TERM EVALUATION OF FIBER-REINFORCED-PLASTIC APPLICATIONS

** Construction of Fiber-Reinforced-Plastic Bridge Deck on US-151 in Wisconsin (04-4486)

Adam C. Berg

University of Wisconsin, Madison

Lawrence C. Bank

University of Wisconsin, Madison

Michael G. Oliva

University of Wisconsin, Madison

Jeffrey S. Russell

University of Wisconsin, Madison

A two-span highway overpass using a bridge deck reinforced with fiber-reinforced polymers was constructed on US 151 in Wisconsin. A twin structure adjacent to the bridge will serve as a comparison for a constructability study and load tests that will be performed before the bridges open to traffic. This paper focuses on the FRP materials used in the bridge deck and the construction process.

7:30 p.m. – 9:30 p.m., Marriott (Virginia B)

SESSION 360: TOOLS TO ASSESS PROPERTIES OF COMPACTED SOILS

** Soil Stiffness Gauge and Dynamic Cone Penetrometer for Earthwork Evaluation (04-4146)

Auckpath Sawangsuriya

University of Wisconsin, Madison

Tuncer B. Edil

University of Wisconsin, Madison

This study investigates the applicability and limitations of using the soil stiffness gauge and dynamic cone penetrometer as construction control tools. Survey data of natural earthen materials, industrial by-products, chemically stabilized soils, and other materials from Wisconsin construction sites are presented, as is their correlation with each other as well as with density and moisture content obtained from traditional tests.

Supported by WisDOT RD&T funds for research project No. 0092-01-05, Evaluation of the Dynamic Cone Penetrometer and Soil Stiffness Gauge for Measuring Subgrade Stability. See updates on this and other WisDOT geotechnical research on the Research and Library Internet pages at <http://www.dot.state.wi.us/library/research/reports/soils.htm>.

TUESDAY, JANUARY 13

8 a.m. – 9:45 a.m., Hilton (Monroe West)

SESSION 431: MACROECONOMIC ANALYSIS WITH STATEWIDE PLANNING

Kenneth J. Leonard

Wisconsin Department of Transportation, presiding

This session includes presentations on economic benefits of highway improvements and economic effects of transportation benefits.

Transit Sector Socioeconomic Analysis Study (P04-0864)

John Etzler

Wisconsin Department of Transportation

Wisconsin's 69 public transit systems provide an estimated 99 million rides each year. Researchers used quantitative

measures to analyze the benefits of public transit to other economic sectors in Wisconsin (employment, health care, education and service). They also measured the impact of public transit on congestion management in urban areas.

Supported by WisDOT RD&T funds for research project No. 0092-03-07, Transit Sector Socioeconomic Analysis. See updates on this and other WisDOT policy research on the Research and Library Internet pages at <http://www.dot.state.wi.us/library/research/reports/policy.htm>.

8 a.m. – 9:45 a.m., Marriott (Virginia B)

SESSION 4II: USE OF CONTAMINATED, WASTE, AND RECYCLED MATERIAL IN TRANSPORTATION APPLICATIONS

** Equivalency of Crushed Rock and Three Industrial By-Products for Working Platforms During Pavement Construction (04-3105)

Burak F. Tanyu

University of Wisconsin, Madison

Craig H. Benson

University of Wisconsin, Madison

Tuncer B. Edil

University of Wisconsin, Madison

Woon-Hyung Kim

University of Wisconsin, Madison

Supported by WisDOT RD&T funds for research project No. 0092-45-18, Field Performance of Subbases Constructed with Industrial By-Products. See updates on this and other WisDOT geotechnical research on the Research and Library Internet pages at <http://www.dot.state.wi.us/library/research/reports/soils.htm>.

9:30 a.m. – 12 p.m., Hilton (Exhibit Hall)

POSTER SESSION 44I: APPLICATIONS OF INTERNET AND WEB TECHNOLOGIES IN TRAFFIC AND LOGISTICS SYSTEMS

Bin Ran

University of Wisconsin, Madison, presiding

This session includes presentations on information sharing among railway information systems in China, information technology adoption and use, using Weblogs and content management systems in managing transportation construction projects, and the ADART order entry system.

** Special Factor Adjustment Model Using Fuzzy Neural Network in Traffic Prediction (04-4688)

Heng Xiao

University of Wisconsin, Madison

Hongyu Sun

University of Wisconsin, Madison

Bin Ran

University of Wisconsin, Madison

This paper refines the authors' traffic prediction model to calculate the influence of special factors using a neuro-fuzzy network. The model eliminates statistical noise caused by random travel conditions.

** Prediction Intervals for Traffic Time Series (04-4602)

Hongyu Sun

University of Wisconsin, Madison

Chunming Zhang

University of Wisconsin, Madison

Bin Ran

University of Wisconsin, Madison

Providing probability in traffic prediction can increase user comfort by reducing information risk and aid researchers in prediction model selection. In this paper, researchers present two approaches to constructing prediction intervals for the traffic data time series. A case study using real-world traffic data will be presented for each approach, and the results compared.

10:15 a.m. – 12 p.m., Shoreham (Hampton)

SESSION 46I: AIRLINE ANALYSIS: ANALYTIC TECHNIQUES FOR IMPROVED OPERATIONS

** Stochastic and Dynamic Yield Management When Aircraft Assignments Are Subject to Change (04-2473)

Xiubin Wang

University of Wisconsin, Superior

In the commercial airline industry, aircraft assignments are subject to changes because of irregular operations and the practice of reassigning planes to alternative routes due to unexpectedly high or low demand. This paper addresses the need for yield management that incorporates the possibility of future capacity changes, examining solutions relative to optimal control policies and revenue potential.

10:15 a.m. – 12 p.m., Hilton (Military)

SESSION 471: APPLICATIONS OF ARTIFICIAL INTELLIGENCE LEARNING SYSTEMS

** Temporal Difference Learning with Recurrent Neural Network in Multistep-Ahead Freeway Speed Prediction (04-4233)

Fan Yang

University of Wisconsin, Madison

Hongyu Sun

University of Wisconsin, Madison

Yang Tao

University of Wisconsin, Madison

Bin Ran

University of Wisconsin, Madison

Much of the research in traffic information forecasting focuses on short-term (5 to 30 minutes) traffic prediction. However, multistep-ahead and single-point traffic information forecasting will play a key role in supporting demand forecasts needed by operational transportation network models. This research evaluates the combination of temporal difference learning and recurrent neural networks for multistep-ahead and single-point prediction of freeway speed.

10:15 a.m. – 12 p.m., Shoreham (Ambassador)

SESSION 457: FIBER-REINFORCED-PLASTIC FIELD APPLICATIONS

** Ultimate Load Testing and Performance of Bridge Strengthened with Fiber-Reinforced Composite Materials and Powder-Actuated Fasteners (04-3986)

Lawrence C. Bank

University of Wisconsin, Madison

This study tested the performance of a bridge retrofitted with fiber-reinforced polymer composite strips. Researchers attached the strips, designed to increase the bridge's flexural capacity, to the underside of a bridge deck in Edgerton, Wis. After 10 months, they measured the ultimate strength of the bridge and checked for degradation of the strengthening system due to environmental exposure.

Supported by WisDOT RD&T funds for research project No. 0092-02-14, Rapid Strengthening of Reinforced Concrete Bridges. See updates on this and other WisDOT bridge research on the Research and Library Internet pages at <http://www.dot.state.wi.us/library/research/reports/bridges.htm>.

10:15 a.m. – 12 p.m., Hilton (Georgetown West)

SESSION 475: SAFETY AND DATA MANAGEMENT IN INDIAN COUNTRY

** Abbreviated Traffic Record Assessment for St. Croix Chippewa of Wisconsin (P04-0599)

Martha Florey

Wisconsin Department of Transportation

This paper describes an abbreviated traffic records assessment implemented by the tribal government of Wisconsin's St. Croix Chippewa, in partnership with WisDOT's Bureau of Transportation Safety and FHWA. The abbreviated assessment, made possible by the tribe's small population density, evaluates data collection, storage and retrieval practices and compares the results to national standards.

1:30 p.m. – 3:15 p.m., Hilton (Lincoln West)

SESSION 502: METADATA: PERSPECTIVES OF VARIOUS TRANSPORTATION COMMUNITIES

Information Systems and Technology (P04-0132)

Jeffrey L. Western

Wisconsin Department of Transportation

1:30 p.m. – 3:15 p.m., Hilton (Jefferson West)

SESSION 500: SIGNALIZATION FOR PEDESTRIAN SAFETY

David A. Noyce

University of Wisconsin, Madison, presiding

This session includes presentations on the contributions of vision and audition to gap detection by pedestrians, the effect of push-button location on pedestrian behavior, intersection safety for blind pedestrians, prioritizing intersections for accessible pedestrian signal installation, and the comparison of four accessible pedestrian signal technologies.

2:30 p.m. – 5 p.m., Hilton (Exhibit Hall)

POSTER SESSION 515: REAL-WORLD APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN TRANSPORTATION

**** Using Image Sensors to Measure Real-Time Traffic Flow Parameters (04-4174)**

Zhaozheng Yin

University of Wisconsin, Madison

Fan Yang

University of Wisconsin, Madison

Bin Ran

University of Wisconsin, Madison

Traffic flow parameters, including speed and volume, are critical to traffic management systems and traffic control. This research focuses on developing a flexible, reliable system to collect real-time traffic parameters through image sensors (virtual loops).

3:45 p.m. – 5:30 p.m., Shoreham
(Congressional A & B)

SESSION 537: EMERGING TECHNOLOGIES FOR TRANSPORTATION SECURITY

Jeffrey L. Western

Wisconsin Department of Transportation, presiding

This session includes presentations on chemical agent and toxic industrial material sensor technologies, integrating transportation and public safety operations, intrusion detection and facilities, and early-warning crisis management systems for chemical attacks on transportation systems.

3:45 p.m. – 5:30 p.m., Hilton (Monroe West)

SESSION 548: REAL-TIME TRAFFIC DATA MANAGEMENT AND ARCHIVING

**** Wavelet Preprocessing for Local Linear Traffic Prediction (04-4674)**

Hongyu Sun

University of Wisconsin, Madison

Heng Xiao

University of Wisconsin, Madison

Fan Yang

University of Wisconsin, Madison

Bin Ran

University of Wisconsin, Madison

Yang Tao

University of Wisconsin, Madison

This research explores wavelet preprocessing in combination with the local linear predictor for short-term traffic forecasting. Wavelet preprocessing has been used primarily in conjunction with neural network predictors, and shows promise in increasing the accuracy of the local linear predictor.

**** Online Recursive Short-Term Traffic Prediction Algorithm (04-3212)**

Fan Yang

University of Wisconsin, Madison

Zhaozheng Yin

University of Wisconsin, Madison

Bin Ran

University of Wisconsin, Madison

Short-term traffic information prediction is crucial to real-time travelers' information and route guidance systems. This study proposes an online adaptive model that takes historical off-line data into account, in contrast to many existing studies that focus on fixed-size data and presume time-invariant models.

5:30 p.m. – 7:30 p.m., Marriott (Nathan Hale)

WISCONSIN TRANSPORTATION RECEPTION

Sponsored by the Midwest Regional University Transportation Center and others.

The reception will feature poster presentations of ongoing research activities as well as opportunities to interact with fellow transportation professionals.

7:30 p.m. – 9:30 p.m., Shoreham (Empire)

SESSION 563: ALTERNATIVE PAVEMENT SECTIONS

** Comparative Analysis of Distresses on Asphalt Shoulders Adjacent to Dowel- and Non-Dowel-Jointed Plain Concrete Pavements (04-4222)

Sam Owusu-Ababio

University of Wisconsin, Platteville

Robert P. Schmitt

University of Wisconsin, Platteville

The use of dowels as a component of concrete pavement construction became a design policy standard in Wisconsin in 1988. This research evaluates the impact of dowels on the performance of asphalt shoulders adjacent to concrete pavements. A comparative analysis documents the extent and severity of distresses occurring on the asphalt-surfaced component of composite shoulders adjacent to dowel- and nondowel-jointed plain concrete pavements.

Supported by WisDOT RD&T funds for research project No. 0092-02-05, Performance of Shoulders Adjacent to Concrete Pavements. See updates on this and other WisDOT pavement research on the Research and Library Internet pages at <http://www.dot.state.wi.us/library/research/reports/index.htm>.

7:30 p.m. – 9:30 p.m., Shoreham (Palladian)

SESSION 565: INNOVATIVE MATERIALS FOR BRIDGES

Punching Shear in Fiber-Reinforced-Polymer Bilayer Grid-Reinforced Concrete Bridge Decks (04-4249)

David A. Jacobson

University of Wisconsin, Madison

Lawrence C. Bank

University of Wisconsin, Madison

Michael G. Oliva

University of Wisconsin, Madison

Jeffrey S. Russell

University of Wisconsin, Madison

This research evaluates the structural performance of concrete bridge decks reinforced with a modular three-dimensional fiber-reinforced polymer reinforcement cage. Researchers used several full-scale prototype bridge deck slabs and simulated design wheel loads to investigate both fatigue and static load performance, and the punching shear behavior of the reinforcement system.

7:30 p.m. – 9:30 p.m., Hilton (Georgetown West)

SESSION 581: LINKING THE PROGRAMMING AND PLANNING PROCESSES: EXPERIENCE FROM FOUR DIVERSE STATES

Wisconsin (P04-0996)

Experiences of Michigan, California and Alaska are also presented.

Kenneth J. Leonard

Wisconsin Department of Transportation

TUESDAY, JANUARY 13 *continued*

7:30 p.m. – 9:30 p.m., Marriott (Delaware A)

SESSION 556: ROAD SIGNS: MOTORIST UNDERSTANDING AND RESPONSE

** Use of Driving Simulator to Evaluate and Optimize Factors Affecting Understandability of Variable Message Signs (04-4980)

Arup Dutta

University of Wisconsin, Madison

David A. Noyce

University of Wisconsin, Madison

Variable message signs often require multiple phases in order to convey a complete message to drivers. Especially during traffic incident management, messages need to be quickly understandable. This research analyzes the factors affecting readability and comprehension of multiple-phase messages, including obstruction of the VMS by traffic or road geometry, sequence and duration of phases of a two-phase message, and message content.

** Motorist Response to Arterial Variable Message Signs (04-4751)

Zhong-Ren Peng

University of Wisconsin, Milwaukee

Nathan Guequierre

University of Wisconsin, Milwaukee

Joseph Charles Blakeman

University of Wisconsin, Milwaukee

Variable message signs on arterial surface streets near expressway entrance points may prove more effective at inducing motorists to change routes during congestion or incidents than their highway counterparts, because drivers have more routing options before they commit to the expressway system. Researchers studied motorist attitudes toward arterial VMS and diversion behavior induced by those signs.

Supported by WisDOT RD&T funds for research project No. 0092-45-17, Benefit Evaluation of Ramp Meters and Variable Message Signs in Wisconsin. See updates on this and other WisDOT intelligent transportation systems research on the Research and Library Internet pages at <http://www.dot.state.wi.us/library/research/reports/its.htm>.

WEDNESDAY, JANUARY 14

9:30 a.m. – 12 p.m., Marriott (Exhibit Hall A)

POSTER SESSION 632: RESEARCH ON SIGNS, MARKINGS, SIGNALS, AND BEACONS

** Deer–Vehicle Crash Patterns and Proposed Warning Sign Installation Guidelines (04-2571)

Keith K. Knapp

University of Wisconsin, Madison

Xin Yi

University of Wisconsin, Madison

Deer crossing signs are the most widely used potential countermeasure to deer–vehicle crashes, but there are no widely available guidelines for the selection of sign loca-

tions. Researchers investigated deer–vehicle crash patterns near 38 pairs of deer crossing signs in five Wisconsin counties, and developed general installation guidelines for the signs.

Supported by WisDOT RD&T funds for research project No. 0092-01-11, Deer–Vehicle Crash Information Clearinghouse. See updates on this and other WisDOT safety research on the Research and Library Internet pages at <http://www.dot.state.wi.us/library/research/reports/safety.htm>.

WEDNESDAY, JANUARY 14 *continued*

2:30 p.m. – 4 p.m., Marriott (Maryland B)

SESSION 677: FENDERS AND FUR: WE'VE GOT TO QUIT MEETING LIKE THIS!

Deer-Vehicle Crash Countermeasures Toolbox: Application Decision and Choice Resource (P04-1048)

Keith K. Knapp

University of Wisconsin, Madison

Supported by WisDOT RD&T funds for research project No. 0092-01-11, Deer-Vehicle Crash Information Clearinghouse. See updates on this and other WisDOT safety research on the Research and Library Internet pages at <http://www.dot.state.wi.us/library/research/reports/safety.htm>.

2:30 p.m. – 4 p.m., Hilton (Lincoln East)

SESSION 695: MODELING OF TRANSPORTATION NETWORKS, PART 2

** Traffic Assignment Model with Fuzzy Travel Time Perceptions (04-3596)

Xuegang Ban

University of Wisconsin, Madison

Bing Hu

University of Wisconsin, Madison

Bin Ran

University of Wisconsin, Madison

Since drivers don't usually have perfect information about traffic conditions, they choose their routes based on their perceived travel time. In order to capture the uncertainty of drivers' perception, fuzzy traffic assignment models have been proposed over the last several years. This paper presents a new class of fuzzy traffic assignment model that includes perceived link/path travel times, route choice conditions and a user equilibrium model.

2:30 p.m. – 6 p.m., Hilton (Caucus)

COMMITTEE MEETING: A5003— INFORMATION SYSTEMS AND TECHNOLOGY

Jeffrey L. Western

Wisconsin Department of Transportation, presiding

This committee reviews and assesses state-of-the-art developments and applications of information systems and technologies in transportation for productivity improvements.

THURSDAY, JANUARY 15

8 a.m. – 9:45 a.m., Marriott (Washington B3)

SESSION 8II: EMERGING TECHNOLOGIES IN FLEXIBLE PAVEMENT REHABILITATION: STABILIZATION AND COLD IN-PLACE RECYCLING

** Field Performance Evaluation of Type-C Fly Ash in Full-Depth Reclamation: Case History Study (04-3950)

Steven W. Krebs

Wisconsin Department of Transportation

Class C fly ash is a coal combustion product from lignite or sub-bituminous coal obtained as a result of the power generation process. In recent years, self-cementing fly ash has been incorporated into full-depth reclaimed material to improve the structural capacity of asphalt pavement base layers. In this study, existing asphalt pavement on a highway was pulverized in place and mixed with fly ash and water to function as a base course, and the contribution of fly ash to the structural performance of the pavement was evaluated.

8 a.m. – 9:45 a.m., Shoreham (Empire)

SESSION 814: MODIFIED ASPHALT BINDERS

** Can Chemical Modification of Paving Asphalt Be Equated to Polymer Modification? Laboratory Study (04-4734)

Hossein Ajideh

University of Wisconsin, Madison

Hussain U. Bahia

University of Wisconsin, Madison

Chemically modifying an asphalt binder with an acid can extend its upper application limit and prevent rutting by improving asphalt stiffness. The low cost of acid modification, relative to polymer additives and other modifiers, makes acid modification an important alternative. Researchers evaluated the effectiveness of two types of chemical treatments with acid and one polymer modifier in improving damage- and construction-related properties of asphalt binders and asphalt mixtures.

** Role of Modified Binders in Rheology and Damage Resistance Behavior of Asphalt Mixtures (04-3974)

Huachun Zhai

University of Wisconsin, Madison

Hussain U. Bahia

University of Wisconsin, Madison

This study provides models for estimating the dynamic properties of modified asphalt mixtures from their binder and aggregate properties, quantifying the relationship between binder properties and mixture properties. It includes data from 36 different mixtures produced from nine different modified binders, which were tested for their rheology, rutting and fatigue resistance.

10:15 a.m. – 12 p.m., Marriott (Maryland B)

SESSION 827: SAFETY INTERVENTIONS AT MARKED CROSSWALKS

** Lighting to Improve Safety at Pedestrian Crosswalks (04-3190)

Balu Ananthanarayanan

Wisconsin Department of Transportation

In 1998 there were 5,220 pedestrian fatalities in the United States, with 61% occurring between 6 p.m. and 6 a.m., presumably often during dark hours. This study evaluates a crosswalk lighting technique used in Switzerland that may have potential to reduce the number of pedestrian fatalities in the United States. Researchers tested visibility at two mid-block crosswalks, comparing the existing lighting system to a new system designed in conformance with the Swiss method.

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